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ABSTRACT

The problem addressed in this study is the identification of economic benefits generated by the 17 Maryland community colleges, and their associated costs. Figures for fiscal year 1977 are used to assess the statewide impact of the community colleges on the business sector, in terms of total impact of expenditures by the colleges and their staffs, the sources of funds for the colleges, how much business property exists in support of their expenditures, how much the credit base of Maryland's banks expanded and how much state business volume was unrealized because of the colleges. Impact on the government sector is considered in relation to: federal tax revenues and transfer payments received by the state; revenue received by local jurisdictions; the cost to the state for provision of services to the colleges and their employees, and the value of state property related to these services; and the amount of state and local real estate taxes foregone because of the tax-exempt status of the colleges. The colleges affected general employment by: making more full-time jobs available, by increasing the earning capacity of their graduates, and increasing state and local tax revenues generated by the increased earnings. Also considered are the state and local investments, and internal rates of return for students and the public. A bibliography and review of the literature are included. (MB)

THE ECONOMIC IMPACTS

OF

MARYLAND COMMUNITY COLLEGES

Dorothy S. Linthicum

Maryland State Board for Community Colleges
The Jeffrey Building • Annapolis, Maryland 21401

September 1978

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PREFACE

In September 1977, Dorothy Linthicum, a graduate student at the University of Maryland, joined the State Board for Community Colleges staff as an intern to conduct the first comprehensive Statewide analysis of the costs and benefits of Maryland's community colleges. This document represents a summary of the culmination of her efforts.

In addition to the Statewide data summarized in this report, Ms. Linthicum also compiled individual impact statements for each of the seventeen public community colleges in Maryland. She has developed a technical manual which contains instructions for updating information, adding survey data, and using the computer model developed for this study. This technical manual has been made available to the colleges and a limited number are also available from the State Board for Community Colleges. Ms. Linthicum also prepared a comprehensive document which completely describes the theories and computations involved in the study. This document is available from the State Board for Community Colleges and through the Educational Resources Information Center (ERIC).

This study was made possible through a grant received from the Maryland State Department of Education, Division of Vocational-Technical Education. The cooperation of the community colleges, especially the institutional researchers and the business officers, is gratefully acknowledged. James Tschechtelin of the State Board staff provided technical assistance during the study and Maxine J. Pope prepared the manuscript.

Finally, the State Board for Community Colleges appreciates the efforts of Ms. Linthicum, who completed this complex project on time, with existing data, in a highly professional manner.

BRENT M. JOHNSON
EXECUTIVE DIRECTOR

INTRODUCTION

The community college segment in Maryland has offered unprecedented access to higher education. By lowering the cost of higher education to students and providing easy geographic access, the community colleges have opened the door to higher education to many citizens who otherwise would not have been able to obtain any college education.

The community colleges have provided many benefits to the people of Maryland, not only in terms of the value of the education provided to the students, but also in the diversity of the institutions themselves. These benefits and their associated costs have been identified in general terms, but no one has ever assigned numerical values to them. The quantification of these benefits and their associated costs could be a useful tool in making decisions about the future direction and priorities of the community college system. The problem addressed in this study is the identification of those economic benefits and costs generated by Maryland's community colleges.

What is cost-benefit analysis?

Cost-benefit analysis is a technique for making decisions within a framework that has a wide range of considerations, including those which are political or social. In simple terms, it is a way of comparing all costs with all benefits. As a formal technique, cost-benefit analysis in the United States dates back to the early part of the 19th century. Since then techniques have improved, and cost-benefit analysis has spread to many fields.

Because cost-benefit analysis is derived from the field of economics, many equate the process with numbers, dollars, and cents. While a cost-benefit study can be just as useful in measuring such noneconomic factors as the social-cultural benefits a community college provides its students, this study will examine only the economic costs and benefits--in other words, the numbers, dollars, and cents.

PURPOSE

Why look at economic costs and benefits?

Taxpayers and their legislative representatives at all levels are seeking evidence to justify the investment made in public community colleges. Part of the rationale for continued support comes from the belief in equalization of opportunity. Many people from different socioeconomic levels, with varying degrees of ability and of all ages, are obtaining a higher education through the community colleges. Another part of the rationale stems from the expectation of increased economic benefits to both the individuals and society as a whole.

The economic benefits can be explained according to the varying kinds of impacts. First and foremost is the investment aspect of education. As a result of community college education, both employees and their employers can expect increased productivity and income.

A corollary to the higher incomes that college education persons generally command is the increased taxes they also pay. These taxes assist in repaying the public for its investment in the community college education.

Finally, the operation of community colleges results directly in more immediate community benefits by providing increased jobs through expenditure of funds, and indirectly as a result of the multiplier effects of spent income.

Associated with these benefits are costs. These costs include not only the capital and operating costs of the community college program but also the opportunity costs associated with the student's foregone income, tax receipts, and production. Income is foregone because, obviously, a person cannot be at work while he is in class. Similarly, payroll taxes are not deducted when a person is not on payroll, and production is lost. This is true of the traditional college student who attends college full-time. To the extent that community college students increasingly attend part-time while employed, income is less likely to be foregone with consequently less loss in payroll taxes and production. The lost property tax receipts for college property which is removed from the tax rolls also must be considered. While not all of these costs are related to each benefit, they must be considered when appropriate in the calculation of costs and benefits.

How can economic costs and benefits be measured in education?

Economic impacts of community colleges can be examined in two ways. In a short-term approach the expenditures of certain dollars are traced throughout a certain region during a short time span, usually one year. A long-term approach considers impacts of investments over a long period of time.

Just as businesses invest in additional capital, e.g., equipment and new buildings, to expand their earnings, individuals and society can invest in education to expand earnings and increase productivity. By paying some costs in the present, they can generate greater returns in the future. This kind of long-term investment is often called human capital investment.

Comparisons of future earnings and the investments made by community college students and the people of Maryland describe which investments are most lucrative. Those factors which are most critical in decreasing or increasing expected returns also are identified. What is the difference, for example, between the student who works part-time, and the one who is unemployed? The State and local jurisdictions can also get an idea of how much additional tax revenue will be generated, and to what extent their investments will be repaid.

The human capital approach is a method of viewing long-range economic impacts. A short-term impact study examines the immediate effects of the income and expenditures of the colleges on the economy of Maryland and the local jurisdictions. Funds enter the economy through the colleges from State and local appropriations, from out-of-state sources, and from student fees and tuition. The funds are circulated through the economy by expenditures of the college for salaries, purchase of materials, and capital building improvements. The impact study can be useful in showing the State and local jurisdictions the ways and extent to which community colleges contribute to the economic base. In addition, impact information can reveal to the colleges how certain of their activities, which were thought to be purely internal matters, affect the community in direct and measurable ways.

How can the numbers be used?

Cost-benefit analysis can cause officials and citizens to look at problems in different ways and help to raise important questions. This study can improve community and college relations by revealing the interrelationships the area and college share. Public officials can be made more aware of the tax costs and tax revenue benefits that the college generates. Faculty and staff can be made more aware of their immediate contribution to the community and State. Finally, State officials and the citizens of Maryland can see that the outlay of

funds in support of community colleges does not disappear but rather supports the State's economy.

Citizens often only view the community college as a cost to be borne. Educators, on the other hand, are inclined to dwell on economic, cultural, and recreation contributions and the visibility an institution brings a community. Neither position adequately portrays the true circumstances unless the two are considered together in light of the actual facts. This study provides some of the facts.

LIMITATIONS

What don't the numbers show?

Colleges are not banks; they do not propose to make money for investors. They do try to enlarge a student's world by introducing new people, new activities, and new ideas. Careful addition, in short, allows the determination of the costs of a community college education, but even the most accurate estimates and projections of economic impact, salaries, fringe benefits, and employment levels cannot reveal its total value.

There are several technical limitations which also should be recognized. For example, in using a multiplier effect to measure the expansion of the initial investment from cycles of respending, it is assumed that the money would not have been spent otherwise. This can be argued readily at the local level but is questionable at the State level. Multiplier effects are generated only by spending that does not withdraw resources from alternative uses in the area. If no community colleges existed, it could be argued that the money would have been spent on the other segments of higher education or by consumers who would be paying less taxes. This study, however, which attempts to estimate as closely as possible the total impact of community college spending in Maryland, will use a multiplier effect. The assumption is made that money spent in support of community colleges would not have otherwise been spent in Maryland. For comparison, estimates not including the multiplier effect are included.

It should also be noted that this study makes use of existing data from the State Board for Community Colleges and the seventeen Maryland community colleges; from federal, State, and local agencies; and the literature in general. Because no new data were compiled, estimates based on similar studies, aggregate data, and judgment were necessary. However, actual figures for most of the critical information were available. Some error also might have been introduced in the attempt to represent all values in 1976 dollars. For example, the Census of

Manufacturing, which was used to assess the economic base of the State and local subdivisions, is taken every five years. Because the 1972 version, which was published in 1976, was used, it was necessary to estimate the growth between 1972 and 1976.

One other word of caution should be mentioned. There is no way to add all benefits in a credit column and all costs in a debit column to come out with one neat answer. First of all, some expenditures and costs would be listed more than once. Secondly, the impact analysis computes both stock and flow figures. These are economic terms which refer to spending on items which are quickly consumed (flow), and spending on items that have a longer life span (stock). Theoretically, these cannot be added to, or subtracted from, one another. A third related point deals with the use of human capital and impact analysis in one study. Like the stock goods, human capital studies deal with long-term investments. The results reflect increased earnings or taxes over a lifetime. The impact analysis is comparable to the flow good because an assessment of the expenditure impacts is made only for the 1977 fiscal year.

Cost-benefit analysis does not pretend to be a perfect technique. Although economic analysis has many imperfections, it can be an effective tool. "The difficulties are not created by cost-benefit analysis. Moreover, they do not render quantitative analysis useless. They simply mean that one has to be discriminating about when and how to use various tools." [18]

PART I: ECONOMIC IMPACT OF EXPENDITURES

INTRODUCTION

The seventeen Maryland community colleges circulate funds through the economy by expenditures for salaries, purchase of materials, and capital building improvements. The funds come from internal sources, including State and local appropriations, student fees and tuition, and from external sources, such as the federal government. It is through the circulation of these funds that the colleges generate their economic impact.

The purpose of this part of the study is to estimate the effect of the Maryland community colleges on the State's economy. In the past higher education has not been measured by economic criteria; more idealistic goals have been used instead. These goals are probably still the most valid measures of success, but as the cost of higher education increases, other criteria have become increasingly important. The utility of education in the work force and the economic impact of higher education on a community and a state are two such criteria. The effect of the product, or the educated individual, will be discussed in Part II. This section will look at the actual effect of the income and expenditures of the seventeen community colleges on the State's economy.

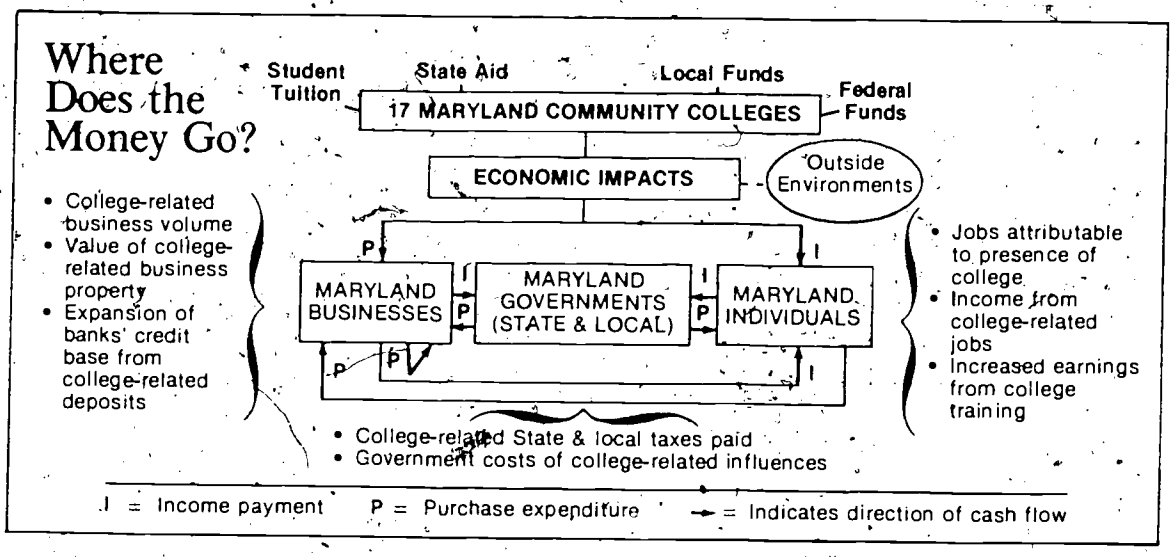
Linear cash-flow equations are used in this study and include only what can be readily counted. They attempt to identify who is spending, how much is spent, and where spending is being done. No single figure tells the story. A college can have several kinds of economic impacts, some of which might be more important than others. The impacts considered in this part of the study are current (fiscal year 1977) and short range. This study also tries to look at both sides of the picture, not only the benefits of spending by colleges and their staffs in the State, but also the costs of supporting them.

Illustration 1 portrays in a schematic form the income-expenditure relationship between the colleges, income recipients, and the surrounding business community. The direction of the arrows indicates the direction of either an income payment flow (I) or a purchase expenditure flow (P). The term "income payment" refers primarily to wages and salaries paid by employers to employees. The term "purchase expenditure" refers to purchases by consumers and purchase of intermediate products by business. A main objective of this study is to

estimate, where feasible, the magnitude of cash flows in Maryland which are related to the seventeen community colleges. The only out-of-state flow estimated in this study is the level of in-State expenditures by out-of-state faculty and staff.

ILLUSTRATION 1

MARYLAND COMMUNITY COLLEGES
WHERE DOES THE MONEY GO?



An essential point which is not explicitly shown in Illustration 1 is that an increased level of purchases from both Maryland and out-of-state businesses results in increased income in the form of wages, interest, rent, and profit. Additional income flows generate additional purchases, which in turn create additional income. A circular process results within the period of a year causing in economic terms a "multiplied effect." This means that the total income for the participants as a group is increased.

The models or formulas used in this study are not appropriate for either planning or forecasting purposes. They do not include business cycle impacts on the State nor do they

take into consideration multi-region interdependence. This means they do not take into account the tempo of economic activity, the economic calendar, or economic stability. The models do describe, however, what is happening to the money the public invests in Maryland's community colleges.

The models are also limited to estimating short-term economic impact. They are not concerned with the ultimate economic impact of the colleges upon the State, and they do not consider what the State might have been like without the colleges. The type of impact reported in this study applies to operations in a typical year, with the assumption that this would be similar to other years.

The models provide a built-in understatement since the actual economic impacts are probably greater than the figures suggest. The models also are flexible and comprehensive in the measurement of dollar outlay, and they indicate where and how the dollars invested in community colleges were spent.

The equations or models use data that are available from the State Board for Community Colleges and college records, State and local governments, federal and State statistical publications, and the literature in general. A balance was attempted between accuracy and ease of data acquisition. The models developed by Caffrey and Isaacs and published by the American Council on Education [7] were modified to apply to community colleges and a statewide system of higher education. They should not be expected to reflect a comprehensive, in-depth picture of all possible economic relationships between the colleges and the State. The precision of the figures in this part of the study may not be as important as their clarity. The assumptions behind them are specific but may be modified if additional information becomes available. As a general rule, the approach has been conservative in nature. If a larger benefit could not be documented, even though it appeared to be accurate, the more conservative figure was used.

In one regard, the study measures "inclusive" impacts, in the sense that it includes all full-time employees who might or might not have lived and worked in Maryland if the colleges did not exist. However, student impacts were not assessed because it could be argued that they would have lived and, therefore, spent their money in Maryland regardless of the community colleges. (Only 3 percent of the total student population came from out-of-state.) The younger students, for example, might have entered one of the State colleges or universities, while older, part-time students might have elected to go to a State institution or a proprietary school.

The study area includes the entire State of Maryland, including those counties which do not have a community college. The State Board for Community Colleges estimates that over 98 percent of the Maryland population has direct access to a community college. The colleges serve rural students as well as suburban and urban populations that live in the three Standard Metropolitan Statistical Areas (SMSAs) of Baltimore City, Washington, D. C., and Wilmington, Delaware. In the Fall of 1976, almost 80,000 students were enrolled in credit programs in Maryland community colleges and thousands more attended noncredit classes.

It has never been the primary purpose of community colleges to create jobs, generate business for entrepreneurs, or boost sales of durable goods in Maryland--such functions alone can be better performed by a variety of other institutions in the public and private sectors. Community colleges do make higher education accessible to a diverse cross-section of Maryland citizens and in carrying out this primary task, create jobs, generate business, and increase sales.

SUMMARY OF THE STATEWIDE ECONOMIC IMPACT OF MARYLAND COMMUNITY COLLEGES

This section discusses the major findings and results of the Statewide Economic Impact Study. Although all the impacts originate with the activities of the seventeen Maryland community colleges, there are two basic channels through which they flow into the State: the institutions themselves acting as corporate entities, and the faculties and staffs of the colleges acting as individuals. The details of each calculation and sources of data are included in the comprehensive report available at the State Board for Community Colleges. All figures are for the 1977 fiscal year unless otherwise specified.

BUSINESS SECTOR

The numbers in this section attempt to estimate economic impacts of the Maryland community colleges on State businesses. This study estimates impacts of the expenditures in Maryland of the colleges, their faculties and staffs; additional spending stimulated by college-related purchases; the value of State business property committed to college-related business; expansion of Maryland banks' credit base resulting from college-related deposits; and the business volume unrealized because of the colleges' auxiliary enterprises.

What was the total impact of expenditures by the Maryland community colleges and their staffs?

The Maryland community colleges rival many of the State's businesses in total volume of business expenditures in the State and local subdivisions. Total direct and indirect expenditures attributable to the seventeen colleges in 1976-77 were almost $124 million. Of this, almost $62 million were direct expenditures by the colleges and their staffs. This includes in-State expenditures by colleges for supplies and other goods and services: by in-State faculty and staff for housing, goods, and services; and by out-of-state employees for goods and services. Another $62 million were indirect expenditures by local businesses and individuals in support of their college-related business volume. Total direct and indirect expenditures are computed by applying the accepted Statewide multiplier effect of 2.0 on the direct State expenditures. The multiplier effect is an economic gauge of the expansion of dollars injected into an area from a single source resulting from cycles of respending.

One of the reasons the colleges' impact is so significant is that more than 95 percent of their staffs live in Maryland. Because education is labor intensive, about 75 percent of the

colleges' budgets are for compensation of employees, and almost all of the more than $62 million of disposable income (net income after deduction of taxes and Social Security contributions) that faculty and staff receive from the colleges is spent in Maryland. The colleges themselves also buy almost 70 percent of their goods and services from suppliers and individuals in Maryland.

What were the sources of funds for Maryland community colleges in FY 1977?

Maryland community colleges in FY 1977 received a total of $28.6 million from student tuition and fees, $37.7 million from State sources, $31.8 million from local sources, $4.4 million from federal sources (not including pass-through funds received by the colleges for student aid), and $2.1 million from other sources.

How much Maryland business property exists in support of the expenditures of Maryland community colleges and their employees?

The direct expenditures by the colleges and their faculties and staffs do not capture the full impact of such activities on the economic base of the State. The value of Maryland business property, including both real estate and inventories that existed in order to service the colleges and college-related business transactions, was worth an estimated $53 million in 1976-77.

How much did the credit base of Maryland's banks expand as a result of Maryland community colleges?

Both personal and business incomes related to college activity have an additional impact on the State through their expansion of the credit base in State banks. The Maryland credit base was increased by about $25 million as a direct consequence of college-related deposits. A large percentage of this effect comes from the personal accounts of faculty and staff, as well as the cash deposits of business related to their college transactions. The colleges themselves deposited an average of $11 million in time and demand accounts in State banks.

How much State business volume was unrealized in the business sector because of Maryland community colleges?

To the extent that the colleges operate enterprises or provide services in competition with business, the receipts from these activities should be recognized as net subtractions from potential business volume. The receipts from college-operated cafeterias, bookstores, day care centers, and other auxiliary enterprises make up about $5 million of foregone business by State enterprises. This amount should be netted out against

the positive impact on State business volume detailed earlier. This figure is probably high because it does not take into account the business that exists because there is a college, such as book sales in a bookstore.

GOVERNMENT SECTOR

Educational institutions not only hold significant amounts of real property exempt from taxation, but colleges and their staffs also make demands on government for a variety of services, from education to health. The following figures outline the contributions made by college-related influences to the public sector and then assess the cost to the State in terms of foregone property taxes, costs of services, and the operating costs of public schools attributable to the colleges and the households of their staffs.

How much tax revenue and transfer payments did the State of Maryland receive because of the presence of the colleges?

Although the colleges operate under a tax-exempt status, they are nonetheless responsible for direct and indirect cash payments to the State. It is estimated that Maryland in 1976-77 received cash revenues of about $9 million from taxes paid by faculty and staff, from the federal government, and from taxes on business property allocable to college transactions. The sources of these revenues were real and nonreal property taxes ($153,000), federal aid to public schools for children of college-related families ($286,000), federal aid to community colleges ($4,400,000, excluding student aid), State income taxes ($2,445,000); and State sales taxes ($1,506,000). (See Table 1, page 14.)

How much revenue did the local jurisdictions receive because of the presence of the colleges?

Local jurisdictions received an additional $48.7 million directly or indirectly from the community colleges. This includes State and federal aid (including aid for the colleges, but not federal student aid) and other local government receipts derived from the colleges, their faculties and staffs, and the related business activity, such as income tax. (See Table 1, page 14.)

How much did it cost the State of Maryland to provide services for colleges and their staffs?

The State provided services for the faculties and staffs of the colleges valued at more than $8.8 million: $1.9 million of this represented the cost to the State of providing public school education for the children of college personnel, and the balance, $6.9 million, represented the expenditures for services

TABLE 1

MARYLAND COMMUNITY COLLEGES
COLLEGE-RELATED REVENUES RECEIVED BY STATE AND LOCAL GOVERNMENTS

Variable	State	Local
TOTAL REVENUES RECEIVED	$ 8,977,224	$46,583,793
College-related real estate taxes	153,282	1,585,659
Real Estate taxes paid by colleges	50	1,368
Real estate taxes paid by faculty and staff	110,437	1,359,086
College-related real estate taxes paid by businesses	42,795	225,205
Other college-related property taxes	73,112	244,684
Nonreal property tax paid by faculty and staff	38,953	208,740
College-related inventory taxes paid by businesses	34,159	40,944
Sales tax received from college-related purchases	1,506,052	-
College-related income taxes	2,445,167	939,866
College-related aid to public schools	286,196[1]	1,533,543[2]
College-related revenue sharing	139,406[1]	184,797[1]
Aid to community colleges	4,374,009[1]	42,095,244[3]

1 Federal aid.
2 State aid.
3 Federal and State aid.

other than education. Faculty and staff members are estimated to have 2,761 children in the public schools. Because no allowances were made for personnel who would live in Maryland in the absence of community colleges, the estimate of total costs may have been overstated. (See Table 2, page 16.)

What is the value of State property related to services provided for the colleges and their employees?

An indirect cost is the value of State property which is allocated to that portion of services the State provides for college-related activities. This represents the public investment in State property necessary to service the college and its staff. It is similar to the investment in plants, equipment, and inventories in the business sector that existed in support of the colleges and their staffs.

Earlier it was estimated that the value of the services Maryland provides the colleges and their staffs was over $8 million. This study attempts to calculate what proportion of all State-owned property exists in support of these services required by the colleges and their staffs. The value of State property related to the colleges is estimated to be $1.3 million.

How much State real estate taxes were foregone by the State of Maryland because of the tax-exempt status of the colleges in FY 1977?

Foregone State real estate taxes on the colleges' tax-exempt property are estimated at $22,000, based on a tax rate of 23 cents per $100 of assessed value. The simplified procedure which was used to avoid complex estimations of property values has probably resulted in an understatement of the value of both State and local foregone property taxes.

How much local real estate taxes were foregone by the local jurisdictions because of the tax-exempt status of the colleges?

The local jurisdictions were not able to realize another $557,000 in real estate taxes because of the colleges.

These estimates for both local and State foregone taxes are based on a simplified procedure which essentially multiplies the total property tax revenues of the jurisdiction by the college's proportional share of the geographical area. This was done to avoid making specific assumptions about the value of each piece of property and, more importantly, its relation to the value of surrounding property. It also should be noted that the colleges self-provided over $1 million in public municipal-type services, such as security, street lighting, road maintenance, and garbage collection.

TABLE 2

MARYLAND COMMUNITY COLLEGES
COLLEGE-RELATED COSTS TO STATE AND LOCAL GOVERNMENTS

Variable	State	Local
College-related costs to governments for public and other services	$ 8,829,718	$ 6,540,713
College-related costs of services other than public schools	6,917,484	3,078,626
College-related costs of operating public schools	1,912,234	3,462,087
Value of college-related government property	1,302,939	6,664,880
Real estate taxes foregone through tax-exempt status of the colleges	21,814	557,026
Real estate taxes paid by the colleges	50	1,368
Value of local government-type services self-provided by the colleges[1]	-	1,290,867

[1] Variable not used in State model.

GENERAL EMPLOYMENT

How many full-time jobs are available in Maryland because of the colleges?

Impacts from the seventeen community colleges on private individuals in the State of Maryland are largely through jobs and employment opportunities. It is estimated that about 6,700 jobs in Maryland are a result of the activities of the community colleges, 4,450 of these directly with the colleges and 3,250 created as a consequence of college-related business and government expenditures. The total jobs are calculated by multiplying a conservative employment multiplier effect of 1.5 by the number of full-time jobs at Maryland community colleges in 1976-77 .

PART II: HUMAN CAPITAL INVESTMENT

INTRODUCTION

Education is one way that people invest in themselves. By paying some costs in the present, they can generate greater returns in the future. As the term "human capital" implies, individuals have certain capacities or skills of a cognitive, physical, social, or psychological nature with which they earn a living. Higher education is capable of teaching a person general facts, the use of specific tools, and general problem-solving techniques. Higher education also can influence a person's behavior by making him more tolerant of diversity, better able to stand stress, a better leader, and mentally more disciplined. All these factors could make a person a more productive and effective worker and therefore able to command a better income.

There has been considerable study and much controversy about how education and earnings are causally linked. While there may be some doubt as to whether education is a sufficient condition for obtaining a higher paying job, it does appear to be a necessary catalyst for at least the majority of the population.

Economists have known a long time that people are an important part of the wealth of nations. But what many have failed to examine is the simple truth that people invest in themselves and that these investments are very large. Many paradoxes about a dynamic economy can be resolved once human investment is taken into account.

How are human capital investments measured?

Three approaches have been used to quantify the impact of human capital.

Often a simple correlation is made between some measure of educational activity and an index of economic activity. For example, enrollment ratios have been correlated with GNP per capita, indicating a positive relationship. However, this fails to show cause and effect relationships.

Second, the "residual approach" assesses the total increase in the economic output of a region for a period of time, measuring the impact of identifiable inputs and then attributing the residual to unidentifiable inputs, the most important of which is human capital.

The third approach, which is used most often in human capital research, contrasts the future lifetime earnings of people with less education with people that have greater educational attainment. The rate of return method seems to be the most precise because it relates not only benefits but also costs.

To calculate a rate of return, it is necessary to know how much education costs, how much the college educated earn compared to those without a college education, and how much those future earnings are worth today. The comparison of these costs and benefits results in a measure of human capital investment.

How are future earnings estimated in terms of today's value?

"Present values" are obtained from expected future values by a method economists call discounting. This concept is as important in the financial world as it is in the economist's theoretical world. Prospective purchasers of any asset have their eyes on future income or increased wealth from the ownership of the asset. Their demand for the asset reflects their estimate of the total future earnings. That is why, for example, the stock of a corporation that is not earning any net income now may still sell for a high price. It is also the reason that some people invest in education even though there may be a net loss in the present or immediate future.

Wealth in the future, however, is not worth as much as wealth now. Consider the investor that can ordinarily earn 10 percent on his money. For him, $110 a year from now is worth only $100 now. To determine the present value he discounts future wealth at the rate of 10 percent. He divides $110 by 1.10 (1 plus 10 percent) to obtain the present value of $110 a year from now.

Money available today can begin to pay dividends immediately, while money available in the future cannot. Even though a person with higher education may be able to earn more than someone with less education when he is in his forties or fifties, he might have come out ahead if he had continued working and invested his money in a certificate of deposit.

The same theory is used to determine present value from any point in the future. For example, how would our investor determine the present value of $100 four years from now? The present value of $100 received four years from now is $100 divided by 1.10 to the fourth power (1.4641), which works out to about $68.30.

The following is an example of how discounting works in making an investment decision and why present values are necessary.

Joe Jones has $10,000 which he can invest in a savings account that earns 10 percent interest a year. He could also buy into a new company with anticipated net revenues of 0 the first two years, $1,500 the third year, $2,000 the next two years, $2,500 the sixth, seventh, and eighth years, and $4,000 the following two years. Profit becomes negligible past that point.

At first glance, by adding up the profits, it would appear that Mr. Jones would receive $21,000 return on his $10,000 investment, which would be greater than the return from the savings account. But the $4,000 he earns in 10 years is not worth as much to him as it would be if he could invest it now. By estimating the present value of those net revenues, he can decide if he should invest his money in the new business.

The discount rate used is the best interest available in a guaranteed investment, which for Mr. Jones is 10 percent. The present value of the net gains is $10,834, which is only slightly greater than his initial investment of $10,000 and significantly less than he could earn by putting his money in a savings account. Part of the reason for this is the low returns early in the life of the investment. Had he earned $4,000 after the first or second year of operation, the results would have been significantly different.

The concept of present value is important because human capital benefits accrue over a lifetime. It is necessary to know the present value of increased earnings due to education during a person's entire productive lifetime.

It would seem to be a lot easier to just add all earnings differentials instead of going through the complicated discounting procedures. That sum, however, would not mean very much to the student thinking about making an investment in education or a government trying to assess costs and benefits. Just as apples and oranges cannot be added together, dollars from different years cannot be added together without distorting the results and overestimating true values.

What are the costs of human capital investments in education?

The costs of education can be divided into two categories. First, there are the direct costs of salaries, supplies, buildings, and student tuition and fees. Then there are indirect or opportunity costs that take the form of foregone student income or foregone tax revenues.

Many researchers feel that foregone income is the primary cost of direct and indirect expenditures in education. This is the income that a student could have earned if he worked full-time rather than attend school. From society's point of view, foregone income reflects output that is not being produced because a potential labor source has been withdrawn from the labor market.

It is true that the foregone earnings cost is not out-of-pocket, but it does impose a financial sacrifice, particularly on low income families. Illustration 2 indicates how the inclusion of foregone earnings affects the total cost of higher education to the individual and his or her family. (Illustration 2, page 23.)

What are the benefits of human capital investment in education?

On the plus side of the question is the increased productivity that comes as a result of education. The main measure of this productivity is the higher earnings students get because they attended college. This study was interested in the difference in earnings between high school graduates and those with some college education. Students can also receive benefits in the form of financial aid or scholarships while they are in school. Society as a whole benefits from the increased productivity as well as the greater tax revenues from the increased wages.

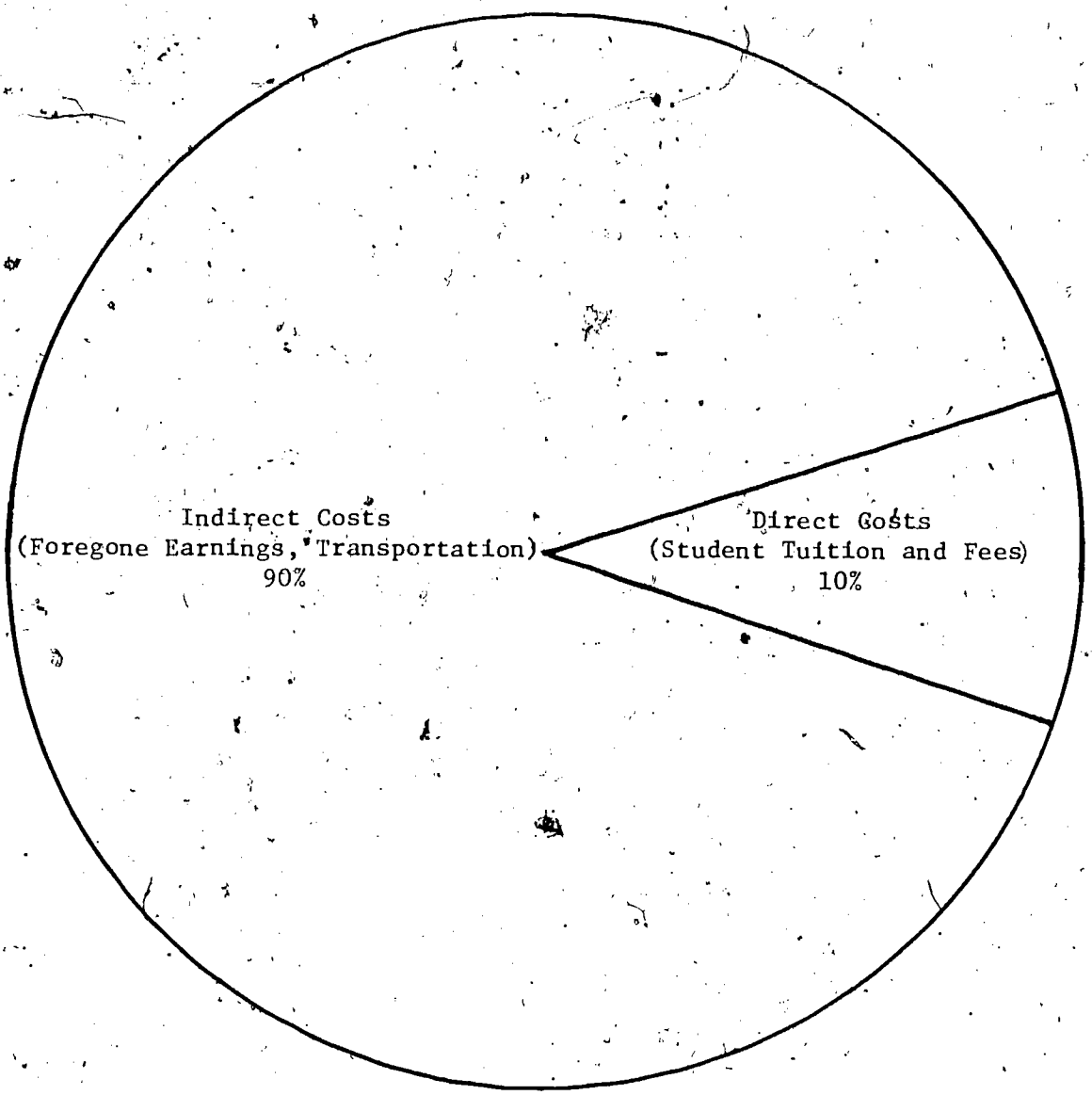
What is the difference between social human capital as opposed to private human capital?

When looking at private human capital investments, only factors affecting the individual are considered. On the cost side are tuition and fees, books and supplies, and foregone earnings. On the benefit side are financial aid and the present value of earning differentials. This is the same information that a student probably uses in making his decisions about whether or not he wants to go to college, where he wants to go, and what his future benefits will be. It does not consider other noneconomic factors which may for some people be more important than the economic ones.

The social human capital model takes into account all costs and benefits to society as an economic entity. To the student costs are added the public costs of subsidies to higher education. For Maryland community colleges the largest portions are contributions from the State and local governments. The final figures reflect the value of the increased productivity of society as a whole.

ILLUSTRATION 2

MARYLAND COMMUNITY COLLEGES
DIRECT AND INDIRECT COSTS TO STUDENTS



What do the numbers mean?

There are two ways of calculating human capital investments. The simplest is to estimate the present value of all the costs and compare it with the present value of all the benefits. This results in a dollar amount that can be compared with other investments. Much depends on the discount rate selected since a high rate will yield lower returns than a low rate. This is illustrated by going back to the example of the investor who was computing present values of $100. The present value of $100 a year from now at a 10 percent discount rate is $90.91. If a 5 percent discount rate is used, the value would be $95.24. For investments that stretch out for long periods of time, such as education, this can have a huge impact.

Another way of looking at human capital investment is by computing the "internal rate of return." Instead of the discount rate being selected because of present market conditions or common assumptions, the discount rate is computed. This is used more often because it allows comparison with those investments which have a guaranteed rate of return. For example, this study estimates that a woman who is unemployed and attending a community college full-time can expect a 5 percent return on her investment in education. Although she probably could get a better return if she worked and invested the money spend on tuition, fees, books, and supplies, she may feel that the non-economic benefits combined with the expected economic benefits make higher education worth her time and expenditures.

SUMMARY OF HUMAN CAPITAL IMPACTS

How much more money in present dollars will a Maryland community college student earn during his or her life than a high school graduate?

On the average, a student will earn between $4,346 and $17,345 more, depending on the assumptions made and the discount rate selected. In computing these amounts, costs include the amount the student spends for tuition and fees, books and supplies, and foregone earnings. Benefits are the difference in earnings between a high school graduate and a person with less than three years of higher education. The first number is a more conservative estimate that was computed with a 10 percent discount rate. The second used more liberal assumptions, including a 5 percent discount rate, a 3.5 percent growth rate adjustment, and an ability factor of 15 percent as opposed to 25 percent. (See Table 3, page 25.)

TABLE 3

MARYLAND COMMUNITY COLLEGES
HUMAN CAPITAL

Category	Present Value of Investment in Community College Education[1]				Internal Rate of Return[2]	
	Private Return for Individuals		Social Return for Individuals			
	Conservative[2]	Liberal[3]	Conservative[2]	Liberal[3]	Private Investment	Social Investment
Average student	$ 4,346	$17,345	$ 3,078	$16,008	26.85%	14.9%
Male						
Part-time student						
Employed full-time	15,335	40,960	14,110	39,648	77.5	40.5
Employed part-time	9,540	34,751	8,315	33,439	18.7	16.8
Unemployed	2,547	27,260	1,122	25,948	11.3	10.7
Full-time student						
Employed full-time	11,224	34,372	9,909	32,994	108.5	45.8
Employed part-time	8,567	31,588	7,252	30,210	23.6	18.6
Unemployed	5,361	28,229	4,046	26,851	14.9	13.2
Female						
Part-time student						
Employed full-time	1,203	4,231	-22	2,919	21.4	10.0
Employed part-time	-916	1,960	-2,141	648	7.2	4.9
Unemployed	-3,179	-464	-4,404	-1,776	3.6	2.4
Full-time student						
Employed full-time	1,308	4,165	-7	2,787	31.1	9.8
Employed part-time	-144	2,643	-1,459	1,265	9.2	5.8
Unemployed	-1,694	1,019	-3,009	-359	5.4	3.8

1 1976 dollars.

2 Based on 10 percent discount rate, 25 percent ability factor, no growth rate adjustment.

3 Based on 5 percent discount rate, 15 percent ability factor, 3.5 percent growth rate adjustment.

How much more money in present dollars will be earned by Maryland community college students enrolled in college in the Fall 1976 semester because of the total investment by the State of Maryland, the local jurisdictions, and the students themselves?

The social human capital model which takes into account all costs and benefits to society as an economic entity, is used to answer this question. The present value of the increased earnings from community college students attending schools during the 1976 Fall semester is between $236.7 million and $1,230.7 million depending on the assumptions made and the discount rate used. To calculate these figures, the social returns for individuals had to be computed. The average social returns accrued by each student, including full- and part-time students, ranged from $3,078 to $16,008 depending on the assumptions. This amount was then multiplied by the total number of students attending a Maryland community college during the 1976 Fall semester.

What is the present value of the additional State and local tax revenues generated from the increased earnings?

The present value of the additional taxes the State and local governments will collect on the increased earnings of community college students is between $25.2 million and $77.6 million depending on the assumptions made and the discount rate used. The cost side of the equation was primarily the amount of foregone taxes the State and local jurisdictions did not receive for those students who were either unemployed or employed part-time. The tax differentials, which made up the benefits, were calculated by multiplying the earning differentials by 5.6 percent, which is an estimate of the average fraction of personal income paid in State and local taxes, exclusive of the property tax.

How much money did Maryland and the local jurisdictions invest?

The total contribution from State and local sources in FY 1977 was $68,316,884 for credit enrollment, including restricted and unrestricted funds. A little over $55 million was spent for operating or unrestricted expenditures for credit enrollment.

What was the internal rate of return for Maryland community college students in FY 1977?

The average community college student who attended college during the 1976 Fall semester will receive almost a 27 percent return on his or her investment in higher education during a

lifetime. The percentages are widely varied according to the status of the students, whether they were full- or part-time, employed or unemployed, male or female. The internal rates of return range from 3.6 percent for part-time female students who were unemployed while in college to more than 100 percent for full-time male students who were employed full-time while in college. Two major reasons for the disparities in the rates of return were the foregone earnings of the unemployed students, and the tendency for women to drop out of the labor force during some part of their careers. Women who do not interrupt their work careers can expect returns similar to those of men.

What was the internal rate of return for the social investment made by the public and the students in FY 1977?

The average rate of return for the social investment in an individual is almost 15 percent for Fall 1976 students. The same method used to determine the present value of the total social investment was used to calculate the social return. First, the individual social rate of return was computed from which the systemwide average was determined. The social rates of return for the different kinds of students ranged from 2.4 percent for part-time female students who were unemployed while in college to 45.8 percent for full-time male students who were employed full-time while in college.

PART III. SUMMARY

Cost-benefit analysis is a technique for making decisions within a framework that has a wide range of considerations, both political and social. In simple terms, it is a way of comparing all the costs with all the benefits. Because cost-benefit analysis comes from the field of economics, many equate it with numbers, dollars, and cents. The process can be just as useful in measuring noneconomic factors, such as the social-cultural benefits a community college provides its students. This study, however, focuses only on the economic costs and benefits, in other words, the numbers, dollars, and cents.

How can economic costs and benefits be measured in education?

Educational expenditures have both long-range and short-range impacts on the economy. From this perspective, the economic impacts of education are very similar to the impacts of businesses.

Just as businesses invest in additional capital (e.g., new buildings and equipment) to expand their earnings, individuals and society can invest in education to expand earnings and increase productivity. By paying some costs in the present, they can generate greater returns in the future. This kind of long-term investment is often called human capital.

By measuring short-term impacts, businesses can better gauge the effects of their activities on a community. Colleges can make similar assessments by tracing their income and expenditures throughout a region during a year. Funds enter the economy through the colleges from State and local appropriations, from out-of-state sources, and from student fees and tuition. The funds are circulated through the economy by expenditures of the colleges for salaries, purchases of materials, and capital building improvements.

How can the numbers be used?

This study can improve community and college relations by revealing the interrelationships that the area and college share. Political leaders can be made more aware of the tax burden and tax revenue benefits that the college generates. Faculty and staff can be made more aware of their immediate

contribution to the community and State. And finally, taxpayers can see that the outlay of funds in support of community colleges does not just disappear.

What don't the numbers show?

Colleges are not banks; they do not propose to make money for investors. They do try to enlarge a student's world by introducing new people, new activities, and new ideas. Even the most accurate estimates and projections of economic impacts, salaries, fringe benefits, and employment levels cannot reveal the value of a college.

Several technical limitations also should be recognized in this study. Actual figures for most of the critical information were available. Because new information was not collected, estimates based on similar studies, aggregate data, and judgment sometimes were necessary. There also is no way to add all benefits in a credit column and all costs in a debit column to come out with one neat answer. Some expenditures and costs could be listed more than once, and other values cannot be added to, or subtracted from, one another.

Cost-benefit analysis does not pretend to be a perfect technique, but it can be an effective tool. Decisions rarely should be based on numbers alone, no matter how sophisticated the technique. This does not render quantitative analysis useless. When and how to use any tool, including quantitative analysis, requires careful discrimination.

STATEWIDE ECONOMIC IMPACT OF MARYLAND COMMUNITY COLLEGES

Although all the impacts originate with the activities of the seventeen community colleges, there are two basic channels through which they flow into the State: the institutions themselves acting as corporate bodies and the faculties and staffs of the colleges. All figures are for the 1977 fiscal year unless otherwise specified.

BUSINESS SECTOR

What was the total impact of expenditures by the Maryland community colleges and their staffs?

Total direct and indirect expenditures attributable to the seventeen colleges in 1976-77 were almost $124 million. Of this, almost $62 million were direct expenditures by the colleges and their staffs, including in-State expenditures by colleges for goods and services, by in-State faculty and staff for housing, goods, and services, and by out-of-state employees for

goods and services. Another $62 million were indirect expenditures by local businesses and individuals in support of their college-related business volume. Indirect expenditures are computed by applying the accepted multiplier effect of 2.0.

What were the sources of funds for Maryland community colleges in FY 1977?

Maryland community colleges in FY 1977 received a total of $28.6 million from student tuition and fees, $37.7 million from State sources, $13.8 million from local sources, $4.4 million from federal sources (not including pass-through funds received by the colleges for student aid), and $2.1 million from other sources.

How much Maryland business property exists in support of the expenditures of Maryland community colleges and their employees?

Almost $53 million worth of business property, including both real estate and inventories, exists in order to service the colleges and college-related business transactions.

How much did the credit base of Maryland's banks expand as a result of Maryland community colleges?

Maryland's credit base was increased by about $25 million as a direct consequence of college-related deposits of faculty and staff and the colleges themselves.

How much State business volume was unrealized in the business sector because of Maryland community colleges?

The receipts from college-operated cafeterias, bookstores, day care centers, and other auxiliary enterprises made up about $5.6 million of foregone business by State enterprises. This does not take into account the proportion of business that exists only because there are colleges.

GOVERNMENT SECTOR

How much tax revenue and transfer payments did the State of Maryland receive because of the presence of the colleges?

Maryland in 1976-77 received cash revenues of about $9 million from taxes paid by faculty and staff, from the federal government, and from taxes on business property allocable to college transactions.

How much revenue did the local jurisdictions receive because of the presence of the colleges?

Local jurisdictions received an additional $48.7 million directly or indirectly from the community colleges through State and federal aid (including aid for the colleges, but not federal student aid) and other local government receipts derived from the colleges, their faculties and staffs, and the related business activity.

How much did it cost the State of Maryland to provide services for colleges and their staffs?

On the cost side of the ledger, the State provided services for the faculties and staffs of the colleges valued at more than $8.8 million; $1.9 million of this represents the cost to the State of providing public school education for the children of college personnel and the balance, $6.9 million, represents the expenditures for services other than education.

What is the value of State property related to services provided for the colleges and their employees?

The value of State property that exists in support of college-related personnel and business is estimated at $1.3 million.

How much State real estate taxes were foregone by the State of Maryland because of the tax-exempt status of the colleges in FY 1977?

Foregone State real estate taxes on the college's tax-exempt property were estimated at $22,000, at a tax rate of $.23 per $100 of assessed value.

How much local real estate taxes were foregone by the local jurisdictions because of the tax-exempt status of the colleges?

The local jurisdictions were not able to realize another $557,000 in real estate taxes because of the colleges in FY 1977. However, the colleges self-provided over $1 million in public municipal-type services, such as security, street lighting, road maintenance, and garbage collection.

GENERAL EMPLOYMENT

How many full-time jobs are available in Maryland because of the colleges?

About 6,700 jobs in Maryland are a result of the activities of the community colleges, 4,450 of these directly with the colleges, and 3,250 created as a consequence of college-related business and government expenditures. The total number of jobs were calculated with a conservative employment multiplier effect of 1.5.

IMPACTS OF HUMAN CAPITAL INVESTMENT IN MARYLAND COMMUNITY COLLEGES

How much more money in present dollars will a Maryland community college student earn during his or her life than a high school graduate?

On the average, between $4,346 and $17,345, depending on the assumptions made and the discount rate selected. Costs include the amount the student spends for tuition, fees, books, supplies, and foregone earnings. Benefits are the difference in earnings between a high school graduate and a person with less than three years of college. The conservative estimate was computed with a 10 percent discount rate, no growth adjustment and a 25 percent ability factor. The more liberal estimate used a 5 percent discount rate, a 3.5 percent growth adjustment and a 15 percent ability factor.

How much more money in present dollars will be earned by Maryland community college students enrolled in college in the Fall 1976 semester because of the total investment by the State of Maryland, the local jurisdictions, and the students themselves?

Using social human capital estimates, the present value of the increased earnings of students is between $236.7 million and $1,230.7 million depending on the assumptions made and the discount rate used. The social benefits for individuals range from $3,078 to $16,008.

What is the present value of the additional State and local tax revenues generated from the increased earnings?

The present value of the additional taxes the State and local governments will collect on the increased earnings of community college students is between $25.2 million and $77.6 million (exclusive of property tax) depending on the assumptions made and the discount rate used.

How much money did Maryland and the local jurisdictions invest?

The total contribution from State and local sources in FY 1977 was $68,316,884 for credit enrollment, including restricted and unrestricted funds. A little over $55 million was spent for operating or unrestricted expenditures for credit enrollment.

What was the internal rate of return for Maryland community college students in FY 1977?

The average community college student will receive almost a 27 percent return on his or her investment in higher education during a lifetime. The internal rates of return ranged from 3.6 percent for part-time female students who were also unemployed while in college to more than 100 percent for full-time male students who were employed full-time while in college.

What was the internal rate of return for the social investment made by the public and the students in FY 1977?

The average rate of return for the social investment in an individual is about 15 percent. The social rates of return for the different kinds of students ranged from 2.4 percent for part-time female students who were unemployed while in college to 45.8 percent for full-time male students who were employed full-time while in college.

REFERENCES

1. Kern Alexander. "The Value of an Education." *Journal of Education Finance* 1 (Spring 1976): 429-67.

2. Neale Baxter. "Payoffs and Payments: The Economics of a College Education." *Occupational Outlook Quarterly* 12 (September 1977): 28-33.

3. Gary S. Becker. *Human Capital*. New York: Columbia University Press, 1975.

4. Robert L. Bish and Candis L. Brown. "Issues in Energy Facility Impact Forecasting." Prepared for the Office of Coastal Zone Management, June 1977.

5. Mark Blaug. Economics of Education. New York: Pergamon Press, 1970.

6. G. Geoffrey Booth and Jeffrey E. Jarrett. "The Identification and Estimation of a University's Economic Impacts." *The Journal of Higher Education* 47 (September/October 1976): 565-76.

7. John Caffrey and Herbert H. Isaacs. *Estimating the Impact of a College or University on the Local Economy*. Washington, D. C.: American Council on Education, 1971.

8. Elchanan Cohn. "Investment Criteria and the Ranking of Educational Investments." *Public Finance* 5 (1972): 355-60.

9. Larry J. Dobesh and Mark S. Henry. *Economic Impact of Higher Education in North Dakota*. Grand Forks, N.D.: University of North Dakota, 1975.

10. Gerald K. Gamber. "What's a College Worth to a Town?" *AGB Reports* 10 (January/February 1977): 11-14.

11. Charles B. Garrison. "New Industry in Small Towns: The Impact on Local Government." *National Tax Journal* 24 (1976): 493-500.

12. W. Lee Hansen and Burton A. Weisbrod. *Benefits, Costs, and Finance of Public Higher Education*. Chicago: Markham Publishing Company. 1969.

13. John C. Hause. "Earnings Profile: Ability and Schooling." *Journal of Political Economy* 80 (May/June 1972): 108-38.

14. Fred Hines, Luther Tweeten, and Martin Redfern. "Social and Private Rates of Return to Investment in Schooling by Race-Sex Groups and Regions." *Journal of Human Resources* 5 (Summer 1970): 328-43.

15. Barclay M. Hudson. "Regional Economic Effects of Higher Education Institutions." *Socio-Economic Planning Science* 8 (Spring 1974): 181-94.

16. Harold H. Kastner, Jr. "Cost-Benefit Analysis of Community College Education." *Journal of Higher Education* 2 (Summer 1977): 17-26.

17. Katherine Lyall and Roger Stough. *Estimating the Impact of the Baltimore Based Johns Hopkins Institutions on the Baltimore City Economy.* Baltimore: The Johns Hopkins University, 1973.

18. Roland N. McKean. *Public Spending.* New York: McGraw-Hill Book Company, 1968.

19. Richard Raymond and Michael Sesnowitz. "The Returns to Investments in Higher Education: Some New Evidence." *Journal of Human Resources* 11 (Spring 1975): 139-53.

20. Theodore W. Schultz. *Investments in Human Capital.* New York: The Free Press, 1971.

21. Gene S. Summers and Jean M. Lang. "Bringing Jobs to People: Does It Pay?" *Small Town* 7 (1977): 4-11.

22. James W. Selgas, John C. Saussy, and Clyde E. Blocker. *The Impact of the College on the Local Economy.* Harrisburg, Pa.: Harrisburg Area Community College, 1973.

23. Lillian Dean Webb. "Cost-Benefit Analysis: An Accountability Asset." *Journal of Education Finance* 2 (Fall 1976): 209-23.

24. Burton A. Weisbrod and Peter Karposf. "Monetary Returns to College Education, Student Ability and College Quality." *The Review of Economics and Statistics* 40 (November 1968): 491-7.

25. Norval L. Wellsfry. "The Economic Impact of the Virginia Community College System, 1966-74. Dissertation: Virginia Polytechnic Institute and State University, 1976.

REVIEW OF THE LITERATURE

HUMAN CAPITAL INVESTMENT

Intensive interest in the proposition that education is an investment in human beings originated with Theodore Schultz in 1960. Since then, establishing the specifics of a causal relationship between education and income has continued to dominate the writing in human capital investment. Kastner [16] notes that research no longer is directed toward the validity of the human capital concept, but is now concerned with determining its value.

The approach most used in human capital research contrasts the future lifetime earnings of people of less education with people of greater educational attainment. Alexander [1] believes that this rate-of-return method is the most precise because it related not only benefits but also costs. Becker's [3] classic study, for example, showed a very substantial private gain to white male college graduates as compared to high school graduates.

To calculate a rate of return, it is necessary to know how much an education costs, how much the college-educated earn compared to those without a college education, and how much those future earnings are worth today. [2]

The costs of education include direct expenditures for salaries, supplies, etc., and indirect or opportunity costs that take the form of foregone student income or foregone tax revenues. [23] There has been some controversy about including foregone income as a cost component. Schultz, Cohn, Blaug, and others feel that it should be included and that a downward bias in costs will be created if it is excluded. [20, 8, 5] Becker claims the dominance of foregone earnings and the relative unimportance of tuition can be vividly demonstrated with rate of return calculations. [3]

The economic value of education is distorted by factors, such as intelligence, parents' education, sex, and race. The degree to which education contributes to higher economic returns is often disputed. Raymond and Sesnowitz [19] contend the income differences between educational categories are likely to be overstated since those with more income are more apt to have greater ability. Much work has been done recently in an attempt to separate the effects of education and ability on earnings, but no clear consensus has been reached. Becker, however, points out that economists have been aware that conventional measures of ability, while relevant at times, do not reliably measure the talents required to succeed in the economic sphere. [3] Hause [13] also feels that adding an ability bias has been somewhat misdirected. Others have consistently corrected final earning differentials by 15 to 33 percent to account for ability differentials. [12, 19, 3, 23] In a study designed to determine the ability factor,

Weisbrod and Karpoff [24] estimated that about one fourth of the difference between the mean earnings of college graduates and the mean earnings of high school graduates as shown by Census data is due to noneducational variables.

Long payoff periods also effect the rate of return on a college education. Becker notes that the length of the payoff period increases the difficulty of anticipating a gain from college. While business investments often pay off within five or ten years, the payoff from college takes much longer. [3] This affects the determination of an appropriate discount rate. Selected discount rates used to compute lifetime earnings were usually 3 to 5 percent. [12] Internal rates of return, or computed discount rates of community college students, ranged from 16.8 percent for white males with no ability adjustment [19] to 2.2 percent for nonwhite males. [14] Kastner found the direct returns to individuals who acquire a community college education represent an annually compounded interest or discount rate of at least 5.6 percent for males and 5.88 percent for females. [16]

Another factor affecting the time span is the normal growth of the economy. Studies show that some allowance for growth rates are probably in order for cross-sectional studies, which measure earnings at one point in time as opposed to cohort studies which trace a group's earnings over a period of time. A 3.5 percent increase per year seems to be an accepted rate. [19]

Becker also suggests that data should be corrected for mortality [3], but Raymond and Sesnowitz argue that it has virtually no impact on the rates of return. [19]

The social economic gain from education, the gain to society as opposed to individuals, differs from the private gain in costs and benefits. Direct costs are obviously greater to society than to students because some of the expenditures of students are paid out of public and private subsidies. Raymond and Sesnowitz show that in all cases the social rates fall short of the corresponding private rates. [19]

Another way of looking at social benefits is by estimating the benefits in the form of future tax returns. Hansen and Weisbrod found that in no case do State and local taxpayers recoup the full value of their investment in higher education. [12]

Economic benefits found by rate-of-return analysis, or any other economic tool currently in use, fall far short of a complete determination of social and private benefits accrued from investing in education. Education, however, still possesses formidable economic benefits, implying that investing greater sums in the development of human capital through education is sound economic policy.

ECONOMIC IMPACT ANALYSIS

The economic impact analysis is actually a series of linear cash-flow formulas which include only what can be readily counted. The formula attempt to identify who is spending, how much is spent, what is being bought, and where spending is being done. They do not show political, social, or aesthetic impacts or the effects upon the community of the colleges' human resources. They do measure dollar outlay and provide simple indicators for planning. [7]

Most of the effects considered in an economic impact analyses are current and short range. They are not concerned with the ultimate impact of the college upon the community, and they do not consider what a community might have been like without the college.

One of the problems associated with economic impact analysis is the determination of the multiplier effect. The purpose of a multiplier is to reflect the final impact of an initial expenditure. The smaller and less self-sufficient the region, the larger the portion of respending that leaks out and the smaller the multiplier effect of the original investment. The larger the region, the greater is the total cycle of respending recaptured by the region, and the larger the multiplier. [15] A multiplier effect of 2.0 is generally accepted for a Statewide region. [4, 11, 21]

The results of studies employing techniques of economic impact analysis have generally found that nonprofit, nontaxed institutions have a capacity to generate employment and millions of dollars in personal income through what is in effect interregional trade. In addition, the subsequent expenditure of that income in the local economy can make an important contribution to economic growth.

A study of Virginia community colleges, for example, demonstrated that higher education institutions give more to the communities than they take. The business volume generated by the presence of the community college system exceeded the State's appropriation for the system by 142 percent for the eight-year period of the study. [25] Other studies also have shown significant benefits. The operation of Harrisburg Area Community College contributed from $2 to $4.5 million annually to the cash flow of the local economy, while the total operating budget of the college was $3.8 million for the year in which the estimate was based. [22]

The Johns Hopkins University, through nonprofit, was found to rival a number of Baltimore's major local businesses in total volume of local business expenditures. Total direct and indirect expenditures attributable to Hopkins in 1972-73 were more than $137 million. However, it receives more in services from the City than it contributes in taxes. The tax-exempt status perhaps recognizes contributions of those unpaid services to the community. [17]

A similar study at the University of Rhode Island showed it generates about $81 million of business in the state and $31 million in the local

area. [6] Another study of higher education institutions in North Dakota found that for each dollar the state appropriated to higher education, the colleges and universities returned $2.10 to the economy of the state, and that total college-related spending provided the state about 10,000 jobs. [9] Gamber's study of St. Cloud State University, Minnesota estimates that university-related spending in the St. Cloud area in 1975 amounted to more than $27 million with an ultimate effect of nearly $59 million. [10]

Most studies indicate that by its presence a college can generate a considerable dollar volume of spending, create jobs, and add stability. Measuring a college's economic accountability can also provide a frame of reference in which to evaluate the college on other more important criteria.